Ordering number: EN 5472

Monolithic Linear IC

LA7386

NTSC Video Signal Processing LSI for VCRs

Overview

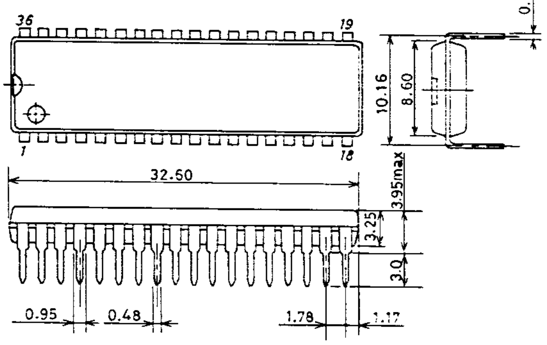
The LA7386 combines luminance signal processing functions and color signal processing functions for NTSC VCRs on a single chip. Developed as a new-generation LSI for use in VCRs which offer increasingly higher image quality, the LA7383 offers all of the functions needed in order to realize improved picture quality in a dramatically compact 36-pin package, making this device suitable for a wide range of VCRs, from popularly priced models to high-end models.

Package Dimensions

unit : mm

3170-DIP36S

[LA7386]



SANYO : DIP36S

Features

- Includes all functions required for video signal processing in an NTSC VCR.
- Supports full HQ functions.
  - YNR on chip (standard).
  - CNR on chip (external components can be removed for passthrough operation).
  - Detail enhancer on chip.
  - Higher white clipping level (190%).
- In addition to the above, also provides the following functions for excellent image quality:
  - Edge compensation.
  - Double high-pass noise canceller → permits wide-band noise reduction.
  - Linear phase-type image quality adjustment → ideal image quality adjustment method, with no waveform distortion.
- By adopting the 1CCD method, one comb filter (glass) has become unnecessary.
  Has a single 1H-delay CCD and a comb Y/C separation/YNR chroma crosstalk canceller function on chip.
- Automatic adjustment filter on chip.
  Y: LPF
  C: 3.58 MHz BPF, 4.21 MHz BPF, LPF (REC)
- No adjustment required for white and dark clipping levels.
- Extremely few peripheral components (about 60 components, excluding peripheral components for the CCD).
- fsc output can be used as clock for OSD IC.
  Crystal oscillator for the on-screen display circuit is not required.
- DCC circuit on chip.
  Suppresses flicker at top of screen and reduces AM noise.
- High-speed AFC circuit.
  Prevents color alteration and loss at top of screen when dubbing.
- Head switching noise reduction circuit on chip.
- Smallest package in the industry.
- Few components needed.

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Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC}max		7.0	V
Allowable power dissipation	Pdmax	Ta ≦ 65°C	1070	mW
Operating temperature	Topr		–10 to +65	°C
Storage temperature	Tstg		–40 to +150	°C

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		5.0	V
Operating supply voltage range	V_{CC}op		4.8 to 5.2	V

Operating Characteristics at Ta = 25°C, V_{CC} = 5 V

Parameter	Symbol	Conditions	min	typ	max	Unit
[REC Mode Y]						
Current consumption REC	I_{CC}R	When V_{CC} = 5 V (when there is no signal), measure sum of incoming currents at pins 29 and 24	95	120	145	mA
AGC adjustment	CAGC	V_{IN} = 1.0 Vp-p video signal, use VR33 to adjust T3 output to 0.5 Vp-p				
VCA control characteristics 1	VCA 1	Measure T3 output level when S9 is set to 2	0.48	0.5	0.52	Vp-p
VCA control characteristics 2	VCA 2	Measure T3 output level when S9 is set to 4	0.48	0.5	0.52	Vp-p
AGC adjustment voltage	V_{AGC}	Measure T33 DC voltage in above state	3.2	3.4	3.6	V
AGC detection voltage	V_{AD}	Measure T32 DC voltage in same manner	1.2	1.4	1.6	V
EE output level	V_{EE}	Measure T28A output level in same manner	0.95	1.0	1.05	Vp-p
AGC output 1	AGC 1	V_{IN} = 2.0 Vp-p video signal Measure T3 output level	500	520	540	mVp-p
AGC output 2	AGC 2	V_{IN} = 0.5 Vp-p video signal Measure T3 output level	460	480	500	mVp-p
AGC output 3	AGC 3	V_{IN} = 714 mVp-p LUMI, 572 mVp-p SYNC, measure T3 SYNC level	135	150	165	mVp-p
AGC output 4	AGC 4	V_{IN} = 714 mVp-p LUMI, 143 mVp-p SYNC, measure T3 SYNC level	90	100	110	mVp-p
Sync separation output level	V_{SYR}	V_{IN} = 1.0 Vp-p video signal, T26 output pulse peak value	4.0	4.2	4.4	Vp-p
Sync separation output pulse width	PW_{SYR}	V_{IN} = 1.0 Vp-p video signal, T26 output pulse width	4.0	4.3	4.6	µs
Sync separation output leading edge delay time	ΔT_{SYR}	V_{IN} = 1.0 Vp-p video signal, measure delay time of output SYNC versus input SYNC	0.8	1.0	1.2	µs
Sync separation threshold level	TH_{SYR}	Gradually attenuate the input level, measure input level at point when output pulse width widens 1 µs or more beyond PWSYR		–18	–14	dB
Sync tip level, pedestal level, white level measurement (REC)	L_{VOR}	Measure electric potential for each of the T28 video output sync tip, pedestal, and white peak, and assign the measured values to L_{SYN}, L_{PED}, and L_{WHI}, respectively				
VCA detection voltage	VVCA	Measure T8 DC voltage	2.80	2.95	3.10	V
Comb filter adjustment		V_{IN} = standard multiburst signal 1 Vp-p and S30 = off, adjust so that the 3.58 MHz component at T21 is at a minimum				
Y-comb characteristics	GY-Comb	Measure the chroma level at T2 with a spectrum analyzer, V_{IN} = standard chroma noise test signal 1 Vp-p and S30 = off			–25	dB
C-comb characteristics	GC-Comb	V_{IN} = white 50% + CW 3.0 MHz			–25	dB

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Parameter	Symbol	Conditions	min	typ	max	Unit
REC YNR operation EP/LP (1)	VR-YNR1	Measure the YNR addition level at T2 with V_{IN} = standard color bar signal 1 Vp-p and S30 = off	10	12	14	mV
REC YNR operation EP/LP (2)	VR-YNR2	Measure the YNR addition level at edit mode T2 with V_{IN} = standard color bar signal 1 Vp-p and S30 = off	2	3	4	mV
Pre-CCD LPF frequency characteristics (1)	G_{PFIL1}	Input a standard multiburst signal (1 Vp-p) and measure the 4 MHz response for 500 kHz at T11	–0.5	0	+0.5	dB
Pre-CCD LPF frequency characteristics (2)	G_{PFIL2}	10 MHz response for 500 kHz at T11 when V_{IN} = standard multiburst signal 1 Vp-p and S30 = off	–10	–8	–6	dB
3MLPF frequency characteristics (1)	G_{3MLP1}	1 MHz response for 500 kHz at T2 when V_{IN} = standard multiburst signal 1 Vp-p and S30 = off	–0.5	0	+0.5	dB
3MLPF frequency characteristics (2)	G_{3MLP2}	2 MHz response for 500 kHz at T2 when V_{IN} = standard multiburst signal 1 Vp-p and S30 = off	–1	0	+1	dB
3MLPF frequency characteristics (3)	G_{3MLP3}	3 MHz response for 500 kHz at T2 when V_{IN} = standard multiburst signal 1 Vp-p and S30 = off	–10	–8	–6	dB
3MLPF frequency characteristics (4)	G_{3MLP4}	3.58 MHz response for 500 kHz at T2 when V_{IN} = standard multiburst signal 1 Vp-p and S30 = off			–30	dB
3MLPF frequency characteristics (5)	G_{3MLP5}	4.2 MHz response for 500 kHz at T2 when V_{IN} = standard multiburst signal 1 Vp-p and S30 = off			–15	dB
FM modulator output level	V_{FM}	No input, use VR36 to adjust output frequency to 4 MHz, measure output level	0.89	1.0	1.12	Vp-p
FM modulator secondary distortion	H_{MOD}	Ratio of 8 MHz component to 4 MHz in the above state		–40	–35	dB
FM modulator modulation sensitivity	S_{MOD}	Measure amplitude of change in output frequency when 2.6 V DC or 3.1 V DC is applied to T3, 2 x (f3.1 – f2.6)	1.6	2.0	2.4	MHz/V
FM modulator linearity	L_{MOD}	Measure output frequency when 2.85 V DC applied to T3, f2.85 $L_{MOD} = \frac{f2.85 - (f3.1 + f2.6)/2}{f3.1 - f2.6} \times 100$	–3	0	+2	%
1/2 f_H carrier shift 1	C_{S1}	Measure amplitude of change in output frequency when SW35B is from on to off and SW35A is off	6.8	7.8	9.5	kHz
1/2 f_H carrier shift 2	C_{S2}	Measure amplitude of change in output frequency when SW35A is on and SW35B is switch from on to off	6.8	7.8	9.5	kHz
Emphasis gain	G_{EMP}	V_{IN} = 0.5 mVp-p 10 kHz sine wave Measure ratio of levels of input and output amplitude at T4	–0.5	0	+0.5	dB
Detail enhancer characteristics (1)	G_{ENH1}	V_{IN} = 158 mVp-p 2 MHz sine wave Measure ratio of levels of T4 and T3, difference with G_{EMP}	1.6	1.9	2.6	dB
Detail enhancer characteristics (2)	G_{ENH2}	V_{IN} = 50 mVp-p 2 MHz sine wave Measure ratio of levels of T4 and T3, difference with G_{EMP}	3.1	4.1	5.1	dB
Detail enhancer characteristics (3)	G_{ENH3}	V_{IN} = 15.8 mVp-p 2 MHz sin wave Measure ratio of levels of T4 and T3, difference with G_{EMP}	5.3	6.3	7.3	dB
Detail enhancer characteristics (4)	G_{ENH4}	V_{IN} = 15.8 mVp-p 2 MHz sine wave Measure output amplitude at T4 in edit mode, difference with G_{EMP}	2.9	3.9	4.9	dB
Nonlinear emphasis characteristics (1)	G_{NLEMP1}	V_{IN} = 500 mVp-p 2 MHz Measure ratio of levels of T4 and T3, difference with G_{EMP}	0.5	1.4	2.3	dB
Nonlinear emphasis characteristics (2)	G_{NLEMP2}	V_{IN} = 158 mVp-p 2 MHz Measure ratio of levels of T4 and T3, difference with G_{EMP}	2.6	3.8	5.2	dB

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Parameter	Symbol	Conditions	min	typ	max	Unit
Nonlinear emphasis characteristics (3)	G_{NLEMP3}	V_{IN} = 50 mVp-p 2 MHz Measure ratio of levels of T3 and T4, difference with G_{EMP}	4.9	6.4	7.9	dB
Main linear emphasis characteristics (1)	G_{ME1}	V_{IN} = 50 mVp-p 500 kHz sine wave Measure ratio of levels of T4 and T3, difference with G_{EMP}	4.9	5.2	5.5	dB
Main linear emphasis characteristics (2)	G_{ME2}	V_{IN} = 50 mVp-p 2 MHz Measure ratio of levels of T4 and T3, difference with G_{EMP}	13.1	13.6	14.1	dB
Detail enhancer US mode characteristics (1)	G_{ENHS1}	Measure the amplitude at T4 when V_{IN} = 15.8 mVp-p 2 MHz sine wave; compare level with G_{EMP}	2.9	3.9	4.9	dB
Detail enhancer US mode characteristics (2)	G_{ENHS2}	Measure the amplitude at T4 when V_{IN} = 15.8 mVp-p 2 MHz sine wave in edit mode; compare level with G_{EMP}	0.7	1.7	2.7	dB
White clipping level	L_{WC}	V_{IN} = 500 mVp-p white 100% video Measure white clipping level at T4	186	193	200	%
Dark clipping level	L_{DC}	V_{IN} = 500 mVp-p white 100% video Measure dark clipping level at T4	–50	–45	–40	%
[PB Mode Y]						
Current consumption PB	$I_{CC}P$	Incoming currents at pins 29 and 24 when V_{CC} = 5.0 V	125	155	185	mA
Dropout compensation period	T_{DOC}	T33A: 4 MHz, 300 mVp-p sine wave T3A: 0.5 Vp-p video signal T33A: time from when input went to 0 until T28A output returned	0.6		1.0	ms
FM demodulation voltage	V_{DEM4}	V_{IN} = 300 mVp-p, f = 4 MHz, output voltage	0.9	1.05	1.15	V
FM demodulation sensitivity	S_{DEM}	V_{IN} = 300 mVp-p, f = 2 MHz, V_{DEM2} V_{IN} = 300 mVp-p, f = 6 MHz, V_{DEM6} Calculate $S_{DEM} = (V_{DEM2} - V_{DEM6})/4$	0.11	0.14	0.17	V/MHz
FM demodulation linearity	L_{DEM}	$L_{DEM} = \frac{V_{DEM4} - (V_{DEM2} + V_{DEM6})/2}{V_{DEM2} - V_{DEM6}} \times 100$	–3.5	0	+3.5	%
Carrier leakage	CL	V_{IN} = 300 mVp-p, f = 4 MHz Ratio between 4 MHz component of T1 and S_{DEM}		–40	–35	dB
Noncorrelation detection level	V_{CORR}	V_{IN} = 500 mVp-p video signal (ramp waveform)		22		IRE
PB YNR characteristics LP/EP (1)	GP-YNR1	V_{IN} = 500 mVp-p noise test signal –30 dB S/N difference with S6 on/off	2.5			dB
PB YNR characteristics LP/EP (2)	GP-YNR2	V_{IN} = 500 mVp-p noise test signal –30 dB S/N difference with EDIT on/off; pin 36 low	1.5			dB
PB YNR characteristics SP (3)	GP-YNR3	V_{IN} = 500 mVp-p noise test signal, –30 dB S6 edit on/off S/N ratio Pin36 low	1.5			dB
Playback through gain	G_{PB}	Apply V_{IN} = 0.5 Vp-p video signal to pin 3, and determine ratio between pin 28 output level and input level	4.5	6.0	7.5	dB
Dropout detection (feedback) level	L_{DOC}	T33A: 4 MHz, 300 mVp-p sine wave T3A: 0.5 Vp-p video signal Measure input signal level when T33A signal drops momentarily and T28A output goes to 0	30	40	50	mVp-p
Nonlinear de-emphasis characteristics (1)	GNL_{DEEM1}	N_{IN} = white 50% video + sine wave f = 2 MHz, 158 mVp-p Measure I/O response, and assign output level described above as 0 dB	–6.0	–5.0	–4.0	dB
Nonlinear de-emphasis characteristics (2)	GNL_{DEEM2}	f = 2 MHz, 50 mVp-p	–9.0	–8.0	–7.0	dB
Double noise canceller characteristics (1)	G_{WNC1}	f = 2 MHz, 158 mVp-p	–2.3	–1.8	–1.3	dB
Double noise canceller characteristics (2)	G_{WNC2}	f = 2 MHz, 50 mVp-p	–6.0	–5.0	–4.0	dB

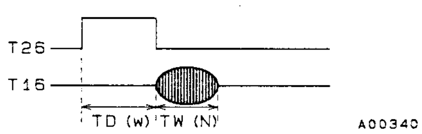
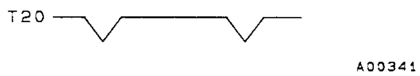
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Parameter	Symbol	Conditions	min	typ	max	Unit
Double noise canceller characteristics (3)	G_{WNC3}	f = 2 MHz, 15.8 mVp-p	–10.5	–9.0	–7.5	dB
Double noise canceller characteristics (4)	G_{WNC4}	f = 3.58 MHz, 158 mVp-p	–2.0	–1.5	–1.0	dB
Double noise canceller characteristics (5)	G_{WNC5}	f = 3.58 MHz, 50 mVp-p	–5.1	–4.1	–3.1	dB
Double noise canceller characteristics (6)	G_{WNC6}	f = 3.58 MHz, 15.8 mVp-p	–10.5	–8.5	–7.0	dB
PIC-CTL hard response characteristics (1)	G_{PH1}	f = 1 MHz, 158 mVp-p	3.5	4.5	5.5	dB
PIC-CTL hard response characteristics (2)	G_{PH2}	f = 2 MHz, 158 mVp-p	7	8	9	dB
PIC-CTL soft response characteristics (1)	G_{PS1}	f = 1 MHz, 158 mVp-p	–5.5	–4.5	–3.5	dB
PIC-CTL soft response characteristics (2)	G_{PS2}	f = 2 MHz, 158 mVp-p	–9	–8	–7	dB
PIC-CTL center response characteristics	G_{PC}	f = 2 MHz, 158 mVp-p	1.0	1.5	2.0	dB
DOC loop gain Y	G_{DOC}	T33A: 4 MHz, 300 mVp-p sine wave T3A: 0.5 Vp-p video signal I/O response 5H after instant when input at T33A went to 0	–1.0	0	+1.0	dB
Sync tip level, pedestal level, white level measurement (PB)	L_{VOR}	With V_{IN} = white 100% 0.5 Vp-p Measure electric potential for each of the pin 28 video output sync tip, pedestal, and white peak, and assign the measured values to L_{SYN}, L_{PED}, and L_{WHI}, respectively		—		
Pseudo V insertion level (PB)	ΔV_{DP}	Measure pin 28 DC voltage when 5 V is applied to pin 26, and assign the measured value to L_{VDP}, and calculate the difference with L_{SYN} $\Delta V_{DP} = L_{SYN} - L_{VDP}$	–80	0	+80	mV
Pseudo H insertion level (PB)	ΔH_{DP}	Measure pin 28 DC voltage when 2.5 V is applied to pin 26, and assign the measured value to L_{HDP}, and calculate the difference with L_{PED} $\Delta H_{DP} = L_{PED} - L_{HDP}$	–200	–100	0	mV
White insertion level (PB)	ΔW_{HP}	Measure pin 28 DC voltage when 1.3 V is applied to pin 26, and assign the measured value to L_{WHP}, and calculate the difference with L_{WHI} $\Delta W_{HP} = L_{WHI} - L_{WHP}$	40	140	240	mV
Sync separation output level	V_{SYP}	V_{IN} = 0.5 Vp-p video signal Pin 26 output pulse peak value	4.0	4.2	4.4	Vp-p
Sync separation output pulse width	PW_{SYP}	V_{IN} = 0.5 Vp-p video signal Pin 26 output pulse width	4.0	4.3	4.6	µs
Sync separation output leading edge delay time	ΔT_{SYP}	V_{IN} = 0.5 Vp-p video signal, measure delay time of output SYNC versus input SYNC	1.4	1.6	1.8	µs
[REC Mode Chroma]						
REC chroma Y/C separation output level	V_{OR-21}	V_{IN} = standard color bar signal (1 Vp-p) Measure burst level at T21	170	220	270	mVp-p
REC chroma low-band conversion output level	V_{OR-14}	V_{IN} = standard color bar signal (1 Vp-p) Measure burst level at T14A	230	330	430	mVp-p
Burst emphasis amount	G_{BE}	V_{IN} = standard color bar signal (1 Vp-p) Ratio of burst level at T14A when S35A is off (SP/EP) and on (LP)	5.5	6.0	6.5	dB
VXO oscillation level	V_{VXO-R}	V_{IN} = standard color bar signal (1 Vp-p), measure T18 output amplitude (with an FET probe)	360	450	540	mVp-p
REC ACC characteristics 1	ACC_{R1}	V_{IN} = standard color bar signal (1 Vp-p), input +6 dB chroma signal level only, measure T14A burst level, and calculate ratio with V_{OR-14}		+0.2	+0.5	dB

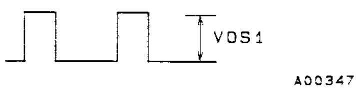
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Parameter	Symbol	Conditions	min	typ	max	Unit
REC ACC characteristics 2	ACC_{R2}	V_{IN} = standard color bar signal (1 Vp-p), input –6 dB chroma signal level only, measure T14A burst level, and calculate ratio with V_{OR-14}	–0.5	–0.1		dB
REC ACC killer input level	$V_{ACCK-ON}$	V_{IN} = standard color bar signal (1 Vp-p), lower the chroma signal, and measure the input burst level at the point where output at T14A ceases, and calculate the ratio with the standard input level	–30	–27	–24	dB
REC ACC killer output level	VO_{ACCK}	Use a spectrum analyzer to measure the output level at T14A in the killer state described previously; ratio with V_{OR-14}		–60	–50	dB
Input level for REC ACC killer return	$V_{ACCK–OFF}$	Starting from the killer state described previously, gradually raise the input chroma level and measure the input burst level when output is generated at T14A and calculate the ratio with the standard input level	–24	–21	–18	dB
VXO control sensitivity	S_{VXO}	Measure the pin 16 DC voltage when a standard color bar signal (1 Vp-p) is input ... V_O Measure the frequency at T18A when V_0 is applied to pin 16 from the external power supply...f_1 Measure the frequency at T18A when V_O + 10 mV is applied to pin 16 ...f_2 $S_{VXO} = \frac{f_2 - f_1}{10}$ Hz/mV	3.3	4.9	7.5	Hz/mV
REC APC pull-in range 1	Δf_{APC1}	Input a 50% white signal overlapping with a 3.5795 MHz, 300 mVp-p continuous wave. After confirming that there is output at T14A, increase the frequency of the CW until the output at T14A stops, and then gradually reduce the frequency until output appears again at T14A; that CW frequency is f_1. $\Delta f_{APC1} = f_1 - 3579545$ (Hz)	350	440		Hz
REC APC pull-in range 2	Δf_{APC2}	In the same manner, reduce the frequency of the CW until the output at T14A stops, and then gradually increase the frequency until output appears again at T14A; that CW frequency is f_2. $\Delta f_{APC2} = f_2 - 3579545$ (Hz)		–900	–350	Hz
BGP delay time for APC ACC	t_D(N)	Input a standard color bar signal overlapping with a 3.98 MHz, 300 mVp-p continuous wave, and measure waveforms at T26 and T16.		4.8		µs
BGP pulse width for APC ACC	t_W(N)			2.5		µs
REC AFC pull-in range 1	Δf_{AFC1}	Input a string of pulses (negative polarity) at 286 mV, 15.7 kHz with a width of 5 µs. After increasing the frequency of the pulse string until the waveform at pin 20 is disrupted, then reduce the frequency until the waveform at pin 20 is normal again; that pulse string frequency is f_1  $\Delta f_{AFC1} = f_1 - 15.734$ (kHz)	+1.0	+7.0		kHz

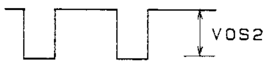
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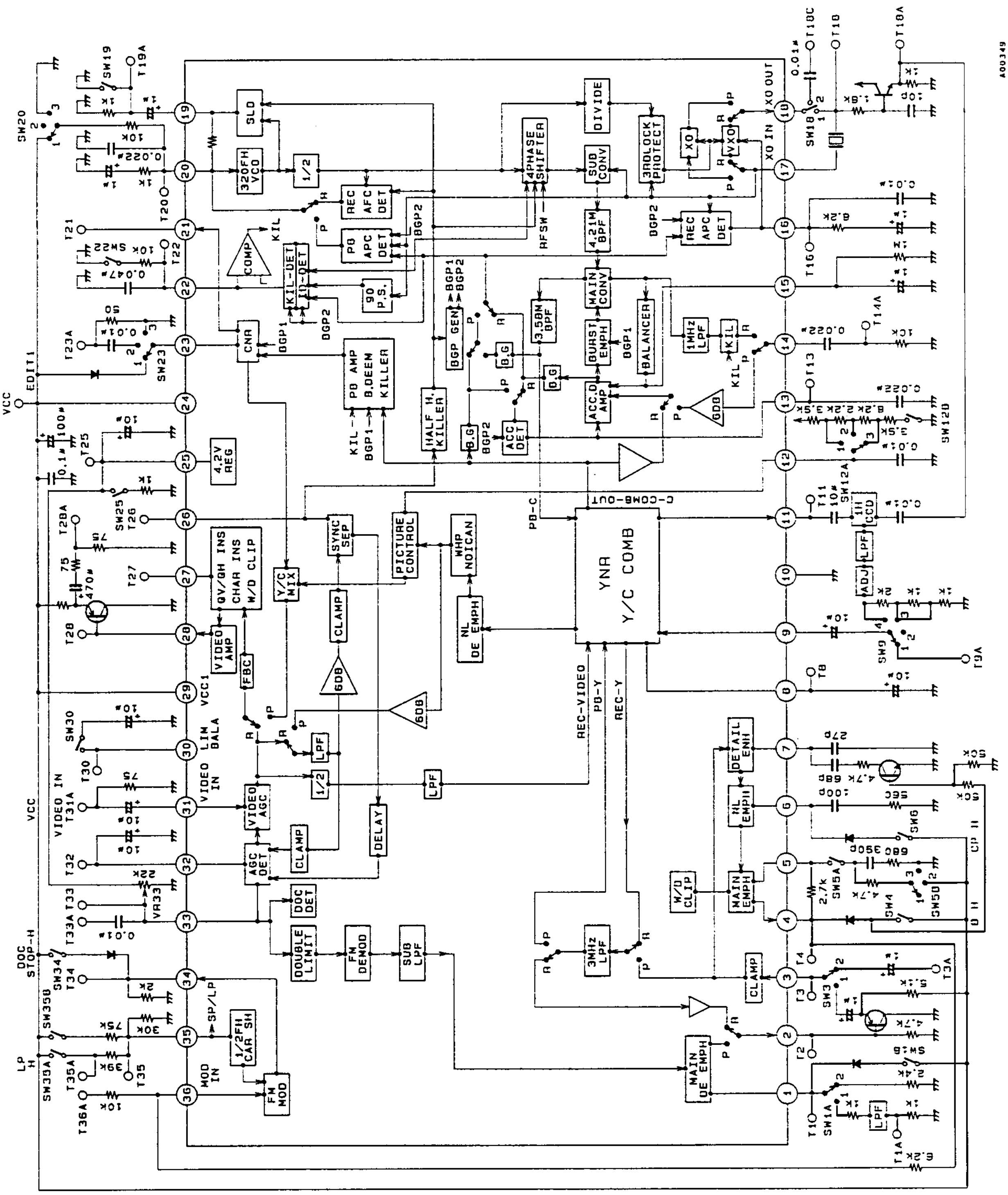
Parameter	Symbol	Conditions	min	typ	max	Unit
REC AFC pull-in range 2	Δf_{AFC2}	In the same manner, after reducing the frequency of the pulse string until the waveform at pin 20 is disrupted, then increase the frequency until the waveform at pin 20 is normal again; that pulse string frequency is f_2 $\Delta f_{AFC2} = f_2 – 15.734$ (kHz)		–6.3	–1.0	kHz
[PB Mode Chroma]						
PB chroma video output level	Vop-28	In PB, SP mode, input a continuous wave from T14A a chroma signal (SP mode, burst 50 mVp-p) that underwent low-band conversion from a chroma noise test signal. Input a 50% white signal from T3A and measure the T28A burst level	210	260	310	mVp-p
PB chroma pin 21 output level	Vop-21	Measure the T21 burst level under the same conditions as for Vop-28	170	200	230	mVp-p
PB ACC characteristics 1	ACC_{P1}	Input the input chroma level at +6 dB under the same conditions as for Vop-28 and measure the T21 burst level, and calculate the ratio with Vop-21		+0.5	+0.8	dB
PB ACC characteristics 2	ACC_{P2}	Input the input chroma level at –6 dB under the same conditions as for Vop-28 and measure the T21 burst level, and calculate the ratio with Vop-21	–0.5	–0.2		dB
PB killer input level	V_{ACK-P}	Lower the input chroma level under the same conditions as for Vop-28 and measure the input burst level at the point where T21 chroma output ceases. (Calculate ratio with standard input of 50 mVp-p)	–55		–40	dB
PB killer chroma output level	V_{OACK-P}	Use a spectrum analyzer to measure the T28 chroma output level in the killer state described previously. Calculate ratio with Vop-28.		–44	–40	dB
PB main converter carrier leak	C_{LP}	Monitor T28A with a spectrum analyzer under the same conditions as for Vop-28 and calculate the ratio between the 3.58 MHz component and the 4.21 MHz carrier leak component.		–40	–33	dB
Burst de-emphasis amount	G_{BD}	From T14A, input a 629 kHz 50 mVp-p continuous wave; from T3A, input a 50% white signal, and calculate the ratio between the output level during the T21 burst interval and the output level during other intervals	–4.35	–4.6	–4.85	dB
PB XO output level	V_{XO-P}	In PB mode, measure the T18 output level with an FET probe	480	610	750	mVp-p
PB XO oscillation frequency variation	Δf_{XO}	In PB mode, measure the frequency at T18...f $\Delta f_{XO} = f – 3579545$ (Hz)	–7	0	+7	Hz
SLD detection current 1	I_{SLD1}	In PB mode, with S20: 3 and S19: off, input a 4 MHz 300 mVp-p continuous wave from T33A, input a 50% white signal from T3A, and measure the wave peak at T19A  I_{SLD1} = VOS1/1 kΩ	110	160	210	µA

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Parameter	Symbol	Conditions	min	typ	max	Unit
SLD detection current 2	I_{SLD2}	In PB mode, with S20: 3 and S19: off, input a 4 MHz 300 mVp-p continuous wave from T33A, input a 50% white signal from T3A, and measure the wave peak at T19A  I_{SLD2} = VOS2/1 kΩ	110	160	210	µA
4.2 V regulator operation confirmation (1)	V42(R)	SW25 → 1 measure T25 DC level REC mode		4.2		V_{DC}
4.2 V regulator operation confirmation (2)	V42(P1)	SW25 → 1 measure T25 DC level PB mode		4.2		V_{DC}
4.2 V regulator operation confirmation (3)	V42(P2)	SW25 → 2 measure T25 DC level PB mode		4.2		V_{DC}

Test Circuit Diagram

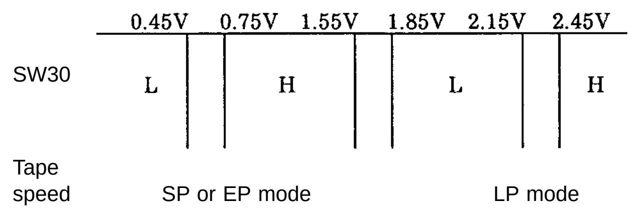


Unit (resistance:Ω, capacitance: F)

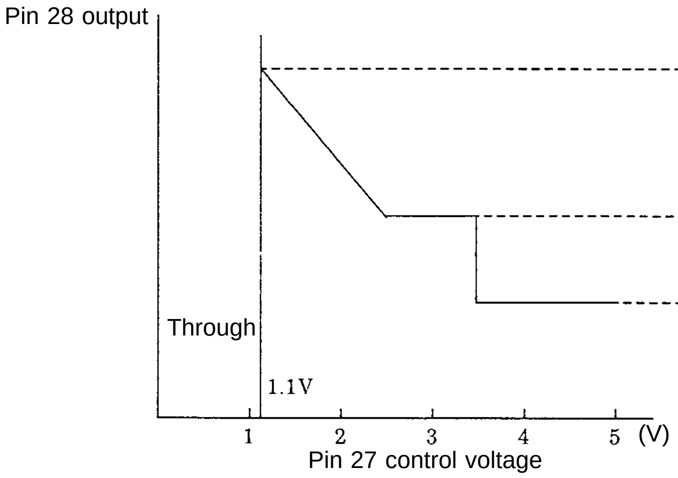
LA7386 Mode Table

Mode	Edit	Y/C separation by comb filter Y (REC)	Y/C separation by comb filter C (REC)	1/2 f_H shift (REC)	Burst emphasis (REC)	NL emphasis (REC)	YNR (REC)	YNR (PB)	High-pass, NC double type (PB)	CNR (PB)	PIC.CTL (PB)	Detail enhancer (REC)		APC. DET. (PB)	Crosstalk correlation switching (PB)
SP	Off (normal)	○	X	X	○	X	K0.5 LIM 3IRE	K0.2 LIM 5IRE	○	○	○(variable)	Strong	(US) Medium	Before comb	○
	On (1) pin 23 H	○	X	X	○	X	X	X	○	X(off)	○	Medium	Weak	Before	○
	On (2) pin 12 H	○	X	X	○	X	X	X	○	○	Mid-point	Medium	Weak	Before	○
LP	Off (normal)	○	○	○	X	○	K0.65 LIM 5IRE	K0.5 LIM 11IRE	○	○	○	Strong	Medium	After comb	X
	On (1) pin 23 H	○	X	○	X	○	K0.25 LIM 3	K0.2 LIM 5	○	X	○	Medium	Weak	After	X
	On (2) pin 12 H	○	X	○	X	○	K0.25 LIM 3	K0.2 LIM 5	○	○	Mid-point	Medium	Weak	After	X
EP	Off (normal)	○	○	○	○	○	K0.65 LIM 5IRE	K0.5 LIM 5	○	○	○	Strong	Medium	After comb	X
	On (1) pin 23 H	○	X	○	○	○	K0.25 LIM 3	K0.2 LIM 5	○	X	○	Medium	Weak	After	X
	On (2) pin 12 H	○	X	○	○	○	K0.25 LIM 3	K0.2 LIM 5	○	○	Mid-point	Medium	Weak	After	X

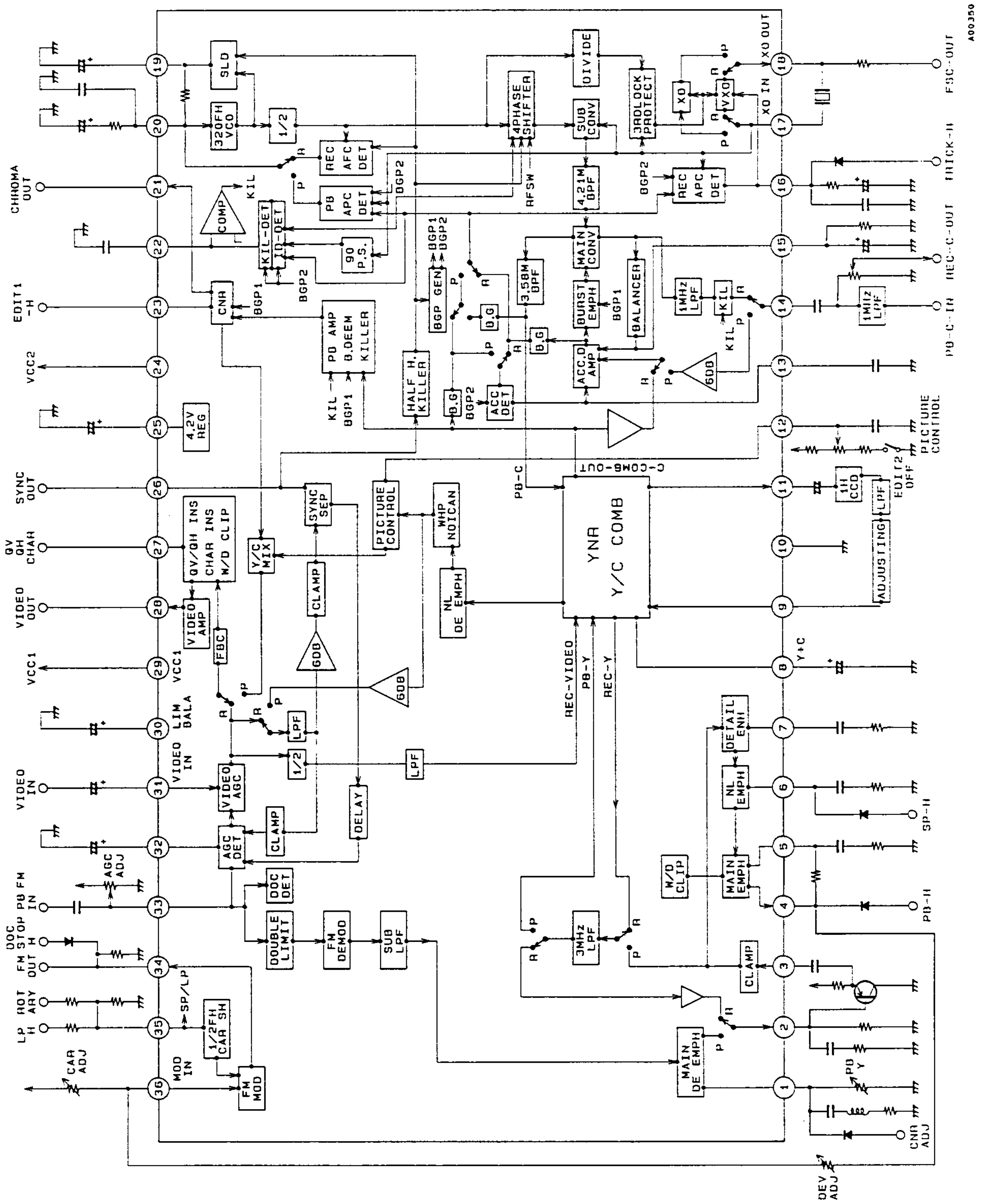
Control Pin Function Chart

Pin No.	L	M	H
Pin 4 R/P switching	Open REC mode		Over 3.8 V PB mode
Pin 6 SP/EP switching	Open EP mode		Over 3.9 V SP mode
Pin 12 EDIT2 PIC-CTL	2 V to 2.5 V PIC-CTL SOFT	2.5 V to 3 V PIC-CTL HARD	Over 3.6 V EDIT2 on
Pin 16 Special playback switching		Open Before comb in SP	Over 3.5 V (over 200 μA) After comb in SP
Pin 23 EDIT1 US	Under 1.5V US specifications	Open	Over 2.5 V EDIT1 on
Pin 27 QV, QH, CHAR		Refer to pin 27, QV, QH, CHAR, insertion diagram	
Pin 35 ROTARY pulse LP switching			

LA7386
Pin 27
QV, QH, CHAR, insertion



Application Circuit Examples



Unit (resistance: Ω, capacitance: F)